CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. – 60. (Cancelled)

61. (New) A system, comprising:

a gain medium to emit an optical beam along an optical path;

a reflective element positioned in the optical path to feedback a first portion of the optical beam to the gain medium;

a tunable element positioned in the optical path to receive the optical beam and to select a lasing frequency of the gain medium, the tunable element further to diffract the optical beam to generate a constructive interference fringe; and

a first optical detector positioned to receive the optical beam and the constructive interference fringe, the first optical detector to generate a first error signal in response the constructive interference fringe.

62. (New) The system of claim 61 wherein the first optical detector is to generate the first error signal in response to a location of the constructive interference fringe impingent on the first optical detector.

63. (New) The system of claim 62 wherein the location of the constructive interference fringe is dependent upon a tuning characteristic of the tunable element, wherein adjusting the tuning characteristic changes the lasing frequency of the gain medium.

64. (New) The system of claim 63, further comprising a first tuning assembly operatively coupled to the tunable element, the first tuning assembly to adjust the tuning characteristic of the tunable element in response to the first error signal.

65. (New) The system of claim 64 wherein the first optical detector comprises a split optical detector having two halves.

66. (New) The system of claim 65 wherein the split optical detector further includes a difference signal generator circuit to generate the first error signal based upon amounts of optical power impingent upon each of the two halves.

67. (New) The system of claim 66, wherein the split optical detector further includes a sum signal generator circuit to generate a second error signal.

68. (New) The system of claim 67, further comprising a second tuning assembly operatively coupled to the reflective element, the second tuning assembly to positionally adjust the reflective element in response to the second error signal.

69. (New) The system of claim 67, further comprising a drive current controller operatively coupled to the gain medium to adjust a drive current applied to the gain medium in response to the second error signal.

70. (New) The system of claim 63 wherein the tunable element comprises a wedge etalon and wherein the tuning characteristic comprises a translatable position of the wedge etalon.

71. (New) The system of claim 70 wherein the wedge etalon comprises a thin film wedge etalon having a half wave layer and a plurality of quarter wave layers.

72. (New) The system of claim 63 wherein the tunable element comprises an electro-optic tunable element and wherein the tuning characteristic comprises a voltage.

73. (New) The system of claim 72 wherein the electro-optic tunable element comprises a liquid crystal material having an index of refraction, wherein the voltage is

to be applied across the liquid crystal material, the index of refraction adjustable in response to the voltage.

74. (New) The system of claim 63 wherein the tunable element comprises a micro-electrical-mechanical system ("MEMS") device having an air gap and wherein the tuning characteristic comprises a voltage applied to electrodes of the MEMS device to adjust a moveable reflective surface associated with the air gap.

75. (New) The system of claim 74 wherein the MEMS device, the gain medium, the reflective element, and the first optical detector are fabricated from a single bulk semiconductor substrate.

76. (New) The system of claim 63 wherein the tunable element comprises a partially transmissive diffraction grating and wherein the tuning characteristic comprises an angular position of the diffraction grating.

77. (New) The system of claim 76 wherein the diffraction grating comprises a chirped diffraction grating including a first end and a second end, the first end having a wider grating spacing than the second end.

78. (New) The system of claim 77 wherein the first optical detector is positioned in a near field of the chirped diffraction grating.

79. (New) The system of claim 76 wherein the diffraction grating comprises an unchirped diffraction grating and wherein the first optical detector is positioned in a far field of the unchirped diffraction grating.

80. (New) The system of claim 61, further comprising a grid generator positioned in the optical path to receive the optical beam, the grid generator positioned between the gain medium and the reflective element.

81. (New) The system of claim 61, further comprising:

a second optical detector positioned to receive a second portion of the optical beam and to generate a second error signal; and

a drive current controller operatively coupled to the gain medium to adjust a drive current applied to the gain medium in response to the second error signal.

82. (New) A method, comprising:

generating a coherent optical beam directed along an optical path;

selecting a wavelength of the coherent optical beam;

diffracting the coherent optical beam to generate a constructive interference fringe; and

generating an error signal in response to the constructive interference fringe.

83. (New) The method of claim 82 wherein generating the error signal comprises detecting a location of the constructive interference fringe impinging upon an optical detector and generating the error signal in response to the location.

84. (New) The method of claim 83, further comprising adjusting the location of the constructive interference fringe in response to the error signal.

85. (New) The method of claim 84 wherein adjusting the location of the constructive interference fringe and selecting the wavelength of the coherent optical beam comprise adjusting a tuning characteristic of a tunable element in response to the error signal, the tunable element positioned to receive the coherent optical beam to select the wavelength of the coherent optical beam and to diffract the coherent optical beam to generate the constructive interference fringe.

86. (New) The method of claim 85 wherein adjusting the tuning characteristic of the tunable element comprises positionally translating the tunable element.

87. (New) The method of claim 85 wherein adjusting the tuning characteristic of the tunable element comprises rotating the tunable element.

88. (New) The method of claim 85 wherein adjusting the tuning characteristic of the tunable element comprises adjusting a voltage applied across the tunable element.

89. (New) The method of claim 83 wherein detecting the location of the constructive interference fringe comprises detecting first and second optical power of the constructive interference fringe impingent upon first and second halves of the optical detector, respectively.

90. (New) The method of claim 89 wherein generating the error signal further comprises determining a difference between the first optical power and the second optical power and generating the error signal based upon the difference.

91. (New) The method of claim 90, further comprising adjusting the location of the constructive interference fringe impinging upon the optical detector in response to the error signal.

92. (New) The method of claim 91 wherein adjust the location of the constructive interference fringe comprises adjusting the location of the constructive interference fringe to center the constructive interference fringe on the optical detector.